

Applicant concurs that the title of the invention is not adequately descriptive. Please amend title Improved Muffler as follows:

ROTATABLE PROPELLER DRIVEN ENGINE EXHAUST SYSTEM.

Remarks

Claim Objection

Claim 17 has been cancelled

Claim Rejections Section 103(a)

Claims 1- 20 have been cancelled. New and/or currently amended Claims 21 - 40 now include all of the limitations formerly found in cancelled Claims 1- 20.

Applicant respectively disagrees with the examiner that there is a basis under 35 U.S.C. 103(a) to reject former Claims 1 – 20 as being unpatentable over Weiss et al. (U.S. 4,263,981) in view of Lyman (U.S. 4,109,753), and further in view of Chang (U.S. 6,343,673).

The present invention encompasses an exhaust chamber system comprising a rotatable propeller type blade assembly within or adjacent to an expansion chamber to create a shaped (**non turbulent**) vortex that swirls and accelerates (**increased** axial flow) exhaust gas towards the outlet. The resultant vacuum within the exhaust chamber aids in scavenging an internal combustion engines exhaust gases, and in **reducing** system back pressure. The exhaust chamber maintains the sound level of the exhaust within acceptable limits, while delivering improved horsepower, torque, and/or fuel efficiency over standard and other performance mufflers.

Weiss et al. merely claims an expansion chamber with sound dampening sections that is for a vacuum pump and not an automobile or combustion engine application (Please see Col. 1, Lines 7 - 9). Additionally, mufflers with expansion chambers lined with sound deadening material are well known in the prior art, and is not the primary aspect of applicant's invention.

Lyman and Chang actually teach away from and are contrary to applicant's invention. Lyman teaches a **fixed** deflector that creates a **turbulent** exhaust gas flow (applicant teaches a

rotatable propeller that creates a shaped vortex **non turbulent** gas flow). In addition, Lyman's invention has a baffle that **restricts** and impinged upon the flow of exhaust gas and **increases** back pressure on the combustion engine (applicant teaches **increased** axial flow of exhaust gas, and a **decrease** of back pressure for improved combustion engine performance). Lyman states (at Col. 3, Line 62 - Col. 4, Line 15 and Col. 4, Lines 20 - 25 and Col. 5, Lines 50 - 62):

"The muffler assembly 10 further includes flow control means...for substantially blocking and restricting the axial flow of exhaust gases 12 along positions of the longitudinal axis...(with) flow control means (which) takes the form of a diffuser 72... The flat baffle 74 presents a blunt face to the exhaust gases 12 which results in considerable turbulence and substantially blocks and restricts the longitudinal flow of exhaust gases..."; and

"A plurality of radially disposed spaced deflector vanes 76 extend radially outward from the centrally disposed baffle of the diffuser... Deflector vanes comprise a set of at least six and preferably at least eight stationary imperforate pin-wheel or propeller like arcuate blades 78..."; and

"In operation, the muffler assembly 10...reduces axial velocity of the exhaust gases.... and substantially creates a general turbulent flow pattern in the muffler 14."

Finally, Lyman teaches an interior chamber of the muffler which is the same diameter as Lyman's baffle/deflector (Please see Figures 2 and 3), thus there is no expansion of cross sectional area (expansion chamber) as in applicant's invention.

Chang teaches a device that is placed at the tail pipe area of a vehicle, and not at the expansion chamber inlet as is the case with applicant's claimed structure, that has an exhaust turbine assembly which forms an **increased** pressure back effect on the engine (applicant **decreases** back pressure on the engine). Chang states (Please see Col. 2, Lines 15 -18 and Col. 2, Lines 37 - 46):

"The vehicle comprises an exhaust tail pipe 20 having an inner wall 21... The turbine exhaust structure comprises a turbine exhaust device 30 secured in the inner wall 21 of the exhaust tail pipe 20...", and

"In operation, when the exhaust waste passes through the turbine exhaust device 30... the gas flow exerts an impact on the rear vane 35, thereby forming a pressure back effect..."

Additionally, Chang's invention lacks an expansion chamber, and Chang's turbine assembly is placed in the center of his device and not at the inlet, as is the case with applicant's invention (Please see Figures 6 and 7).

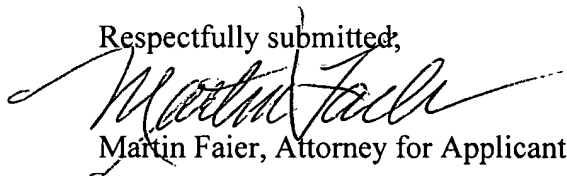
Applicant's invention provides unexpected results in improving engine performance based on the prior art as presented by the examiner, and therefore it would not have been obvious to a person with ordinary skill in the art at the time of the invention was made to combine Chang, Lyman, and Weiss. Furthermore, there is no basis in the references for their combination - and even without such basis, the combination would not yield applicant's device or create an obvious solution as taught by applicant.

Applicant submits herewith the Declaration of Frank Arlasky, attesting to independent dynamometer testing done by automotive experts comparing applicant's structure to conventional devices on a Chevy Tahoe, Ford Expedition, Chevy Avalance, and Dodge Ram, as well as testimonials from an automobile dealer, a automotive parts supplier and an ordinary customer, all attesting to the improved power, torque and gas mileage achieved by applicant's structure. Certainly, this affidavit evidences a new and unexpected result achieved from applicant's vortex type exhaust system, not found or suggested in the prior art.

Applicant submits that the pending claims are patentable over the prior art, and respectfully request allowance.

A listing of the claims in this application accompanies this Amendment A. The Commissioner is hereby authorized to charge any additional fees which may be required in this application to Deposit Account No. 06-0040 of the undersigned attorney. In the case of overpayment, please credit the same account.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Martin Faier", is written over a horizontal line.

Martin Faier, Attorney for Applicant

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